

## ABSTRACT OF THE DISCLOSURE

The present invention discloses a WDM layer-based OChP device and the method thereof, i.e., M protection channels are added in the transmitting module and the receiving module to connect to receiving ends and transmitting ends of M protection channels in the WDM system; a switching device is added so as to switch signals in specified working channels to specified protection channels or switch signals transmitted in specified protection channels back to specified working channels according to switching requests from the WDM system; wherein M and N are natural numbers, and  $M < N$ . Because the number M of protection channels is less than the number N of the working channels, compared with 1+1 or 1:1 protection solution, this solution helps to save optical wavelength resource and initial cost. In addition, compared with 1+1 or 1:1 protection solution, when  $M > 1$ , this solution can significantly reduce the risk of ruined backup performance due to above failures, without requiring increased cost.